

A geometric diagram featuring a sphere with center T. A horizontal axis AS passes through T, with S at the left end and A at the right end. A vertical axis RT also passes through T, with R at the top and T at the bottom. Point Y is located on the vertical axis above the sphere. Several lines originate from Y and intersect the sphere's surface or its great circles. One line goes through point c on the upper part of the sphere, then through F and g. Another line goes through point h on the upper-left part of the sphere, then through p and P. A third line goes through point a on the upper-right part of the sphere, then through E and N. Other lines connect Y to points like D, K, and a. The sphere has several great circles drawn on it, including one passing through A and B, and another passing through M and m. Various other points are labeled on these circles and along the axes, such as R, c, F, g, f, E, N, D, K, a, h, p, P, L, M, m, k, d, b, Z, q, and s.

PRINCIPIA MATHEMATICA.

LIBER
TERTIUS.

Cæterum luna, radio ad terram ducto, aream velocius describit in syzygiis quam in quadraturis, & eo nomine tempus in syzygiis contrahitur, in quadraturis producitur; & una cum tempore motus nodorum augetur ac diminuitur. Erat autem momentum areæ in quadraturis lunæ ad ejus momentum in syzygiis ut 10973 ad 11073, & propterea momentum mediocre in octantibus est ad excessum in syzygiis, defectumque in quadraturis, ut numerorum semisumma 11023 ad eorundem semidifferentiam 50. Unde cum tempus lunæ in singulis orbis particulis æqualibus sit reciproce ut ipsius velocitas, erit tempus mediocre in octantibus ad excessum temporis in quadraturis, ac defectum in syzygiis, ab hac causa oriundum, ut 11023 ad 50 quam proxime. Pergendo autem a quadraturis ad syzygias, invenio quod excessus momentorum areæ in locis singulis, supra momentum minimum in quadraturis, sit ut quadratum sinus distantie lunæ a quadraturis quam proxime; & propterea differentia inter momentum in loco quocunque & momentum mediocre in octantibus, est ut differentia inter quadratum sinus distantie lunæ a quadraturis & quadratum sinus graduum 45, seu semisem quadrati radii; & incrementum temporis in locis singulis inter octantes & quadraturas, & decrementum ejus inter octantes & syzygias, est in eadem ratione. Motus autem nodorum, quo tempore luna percurrit singulas orbis particulas æquales, acceleratur vel retardatur in duplicata ratione temporis. Est enim motus iste, dum luna percurrit *PM* (cæteris paribus) ut *ML*, & *ML* est in duplicata ratione temporis. Quare motus nodorum in syzygiis, eo tempore confectus quo luna datas orbis particulas percurrit, diminuitur in duplicata ratione numeri 11073 ad numerum 11023; estque decrementum ad motum reliquum ut 100 ad 10973, ad motum vero totum ut 100 ad 11073 quam proxime. Decrementum autem in locis inter octantes & syzygias, & incrementum in locis inter octantes & quadraturas, est quam